

IV. REMARKS

By the present amendment, Applicants have canceled claims 1-19 and added claims 20-31. Consequently, claims 20-31 are pending in the present application with claims 20 and 26 being independent claims. Remarks addressing the objections and §§ 112 and 103(a) rejections contained in the (Final) Official Action mailed September 23, 2004 are set forth in turn below.

1. Priority

The Examiner asserts that the provisional application upon which priority is claimed fails to provide adequate support under 35 U.S.C. § 112 for claims 1, 8, and 14 (and, therefore, all dependent claims), because the limitation of maintaining “constant proportional quality of high frequencies in applied sound signals[]” is not supported. Claims 1-19 have been canceled and new claims 20-31, which are fully supported by the disclosures, have been added. Thus, the Examiner’s assertions regarding priority are believed to be moot. Nonetheless, the Applicant believes the disclosure of the provisional application adequately supports the limitation of maintaining “constant proportional quality of high frequencies in applied sound signals[]” as this function is inherently provided by the structures disclosed in the provisional application.

2. Objections to Drawings

The Examiner has objected to the drawings under 37 CFR § 1.83(a), stating that the drawings must show every feature of the claims. In particular, the Examiner asserts that the drawings do not show a “controller having an infinite amount of tap positions

and an infinite plurality of contacts respectively coupled to the infinite multiple tap positions along a continuously tapped coil” Based on the present amendment to the claims and the following remarks, it is believed that the objections raised by the Examiner are moot. Specifically, each element of the claims is illustrated in the drawings. Accordingly, withdrawal of the objections to the drawings is respectfully requested.

3. Rejections under 35 U.S.C. § 1112

The Examiner has rejected claims 4, 5, 11, 12, 17, and 18 under 35 U.S.C. §112, first paragraph, for failing to comply with the enablement requirement. The Examiner has further rejected claims 4 and 7 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In particular, the Examiner asserts that the Applicant has not disclosed or enabled a “device having a controller having an infinite amount of tap positions along a continuously tapped coil.” Office Action mailed September 23, 2004, ¶¶ 5, 6 (hereinafter, “OA, ¶ 5,6”).

As an initial matter, it should be noted that in the previous communications, the Applicant, who is not a patent practitioner and for whom English is a second language, was unfamiliar with the technical requirements of claim language. Thus, certain arguments and claim language may have been expressed in an inartful manner. Accordingly, the present amendment and rebuttals to the Examiner’s Response to

Amendment, which are intended to correct any misunderstandings on the part of the Applicant, should not be viewed as limiting the scope of the claims.

In particular, the Applicant's use of the term "infinite" reflects a layman's understanding of the function of a "Variac" or variable autotransformer ("Variac" is actually a trademark for a particular brand of variable autotransformer, although it may be that the term has become generic as a result of improper use within the art). The structure and operation of variable autotransformers are well known to those of ordinary skill in the art. Thus, although the Applicant may have used the term "infinite," any artisan of ordinary skill would readily understand the actual nature of a variable transformer as being a coil having a variable tap in communication therewith where the variable tap acts to divide the coil into primary and secondary coil segments, the length of which are complimentary to each other and based on the position of the variable tap along the coil.

Because new claims 20-31 accurately recite the structure of a variable autotransformer and claims 1-19 have been cancelled by the present amendment, it is believed that the rejection of claims 4, 5, 11, 12, 17, and 18 under 35 U.S.C. §112, first paragraph and claims 4 and 7 under 35 U.S.C. §112, second paragraph are moot. Accordingly, withdrawal of the rejections is respectfully requested.

4. Rejection under 35 U.S.C. § 103(a)

In the prior Office Actions, claims 1-3, 6-10, 13-16, and 19 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable in view of U.S. Patent No. 4, 363,934 to Scholz ("Scholz") in view of U.S. Patent No. 5,054,076 to Lowell ("Lowell").

Further, claims 4, 5, 11, 12, 17, and 18 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable in view of Scholz in view of Lowell and further in view of Gonzalez (Reference U). Claims 1-19 have been canceled, thus the rejections thereof are believed to be moot. However, Applicant shall generally address the cited art and the rejections asserted by the Examiner in view of the newly presented claims 20-31.

A. Disclosure of the Scholz Reference.

Scholz discloses a volume control apparatus for use with a musical instrument amplifier and speaker. Scholz at column 1, lines 5-8 (hereinafter "Scholz, 1:5-8"). Scholz notes that the objects of the volume control apparatus is to provide volume control while maintaining the appropriate impedance between the amplifier and the speaker. Scholz, 1:5-2:5. Scholz further seeks to eliminate any power loss between the amplifier and speaker, reduce the cost of components (i.e., the elimination of multiple potentiometers), eliminate potentiometers altogether (to avoid the unreliability and non-uniform performance associated with continuously variable resistors), and minimize of size and weight of the volume-controlling device.

The volume control apparatus comprises a ladder network having a first leg made up of a resistor string and a second leg made up of a resistor RB and a speaker. Scholz, 3:35-53. A volume control switch couples the two legs of the ladder network, having a first terminal at the junction of the speaker and the resistor RB and a second terminal that may be selectively moved between seven different positions along the resistor string. Id. Significantly, two additional resistors (R1, R2) are placed in series on opposite ends of the resistor string "for preventing extreme impedance swings about the desired input impedance range." Scholz, 3:50-53. Moreover, the "total series

resistance of resistors RB and RS [the speaker] is less than or approximately equal to the total series resistance of the resistor string RO and resistors R1 and R2.” Scholz, 4:1-8.

B. Disclosure of the Lowell Reference.

Lowell discloses a key-actuated volume control for adjusting the volume of a remote speaker or speakers in a sound system. Lowell, 1:5-9. The key-actuated volume control comprises an autotransformer with multiple fixed taps interposed between an amplifier and a speaker. Lowell, 2:30-66. The sound system is intended for use in a public address context, such as in a warehouse. *Id.*

While not specifically addressed, it is apparent that Lowell is directed solely to solid-state amplification systems without output transformers, as evidenced by the ability to completely short circuit the output of the amplifier. Lowell, 3:9-16; see also, Fig. 2. Short circuiting a musical amplifier in this manner rapidly destroy amplifiers, which typically use output transformers (driving an unloaded transformer typically results in heating and failure of the transformer). Furthermore, Lowell is directed to public address systems. Amplification systems for musical instruments typically have specific performance requirements (e.g., the ability to create and control distortion) that are achieved using vacuum tube and/or output transformers. The performance requirements for public address systems diverge dramatically from these requirements (notably, public address systems seek to minimize distortion) and are easily met by significantly less expensive solid-state, output transformerless designs.

C. Disclosure of the Gonzalez Reference.

Gonzalez discloses the use of a variable autotransformer between the output transformer of a vacuum tube driven amplifier and a speaker to vary the impedance of the load on the output transformer. See Gonzalez, page 1, paragraphs 1-4. Notably, Gonzalez is directed to methods and structures for achieving a variety of different sounds from a single amplifiers. Id. Specifically, Gonzalez states that a user will “be amazed at all the **different sounds** you can get as you vary the matching.” Id. (emphasis added). Also, Gonzalez notes that short circuiting the output transformer (by turning the variable autotransformer “all the way down”) is “bad news for some amps.” Id.

D. The Examiner’s Response to Amendment

The Examiner notes that the amendment to the specification filed 22 April 2004 has been entered in spite of its failure to conform to 37 CFR § 1.121. Accordingly, Applicant believes no further amendment to the specification is required. If the Applicant is mistaken, the Examiner is requested to identify any portions of the amendment filed 22 April 2004 that have not been entered and the Applicant shall re-submit the desired amendments in a manner conforming with 37 CFR § 1.121.

E. The Examiner’s Response to Arguments.

(i) Paragraph 19 of the Examiner’s Response. The Examiner asserts that the argument raised by the Applicant, i.e., that

if a combination of the elements shown in the references Scholz, Gonzalez, and Lowell would have been obvious obvious . . . [then the] combination would have been made already . . . because it would solve two major problems that occur in this technology and are not solved by the state of the art at present

is not the standard by which obviousness is judged. OA, ¶ 19 (quoting Amendment at page 7). To establish a prima facie case of obviousness,

three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure.

In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). However, against the background of the three part analysis,

such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy. . .

MPEP 2141.

However inartfully expressed, the Applicant was addressing the secondary considerations that are relevant to the obviousness inquiry. In fact, the Applicant addressed a number of these secondary considerations throughout the previous amendment. Specifically, the Applicant noted that Scholz references is but one of a number of unsatisfactory attempts to provide post power amp volume attenuation (i.e., a long felt, but unsolved need; failure of others). Amendment at pages 6-7 (directing the Examiner to www.amptone.com for evidence substantiating this assertion); page 11-12. The Applicant has provide additional examples of efforts to provide post power amp volume attenuation in the Information Disclosure Statement accompanying this filing, none of which appear to include the use of an autotransformer.

The Applicant also addressed the success of the present invention by providing evidence of significant industry interest in licensing the invention. Amendment at page 11 and e-mail from the Fender Corporation (expressing interest in licensing the

invention). While not dispositive, this evidence and the arguments made by the Applicant and are certainly appropriate and relevant to the determination of obviousness. Moreover, in view of the secondary consideration analysis, the invention, as recited in claims 20-31 is non-obvious in view of Scholz, Lowell, and Gonzalez.

(ii) Paragraphs 20-26 of the Examiner's Response.

In their essence, the remainder of the Examiner's comments rely on the propositions that a) one of ordinary skill in the art would replace the resistive ladder network of Scholz with the autotransformer of Lowell or Gonzalez to arrive at the invention; and b) "nothing within [Scholz, Lowell, and Gonzalez] teaches away from the current invention[.]" OA, ¶ 24; ¶ 21. For example, the Examiner asserts that

"there is no teaching in Scholz that an autotransformer could not be substituted for the resistive voltage divider . . . nor that a continuously-adjustable impedance means could not be used; Lowell discloses no teaching that a continuously-adjustable autotransformer could not be used in place of the discretely-adjustable autotransformer . . . ; Lowell does not teach that a load resistance . . . could not be connected [to prevent short-circuiting of the amplifier output] . . . ; and Gonzalez does not teach that a load resistor could not be similarly connected to a continuously-adjustable autotransformer . . . in the same manner.

OA, ¶ 21. However, the analysis for the propriety of combining references requires that

(A) The claimed invention must be considered as a whole;

(B) The references must be considered as a whole **and must suggest the desirability and thus the obviousness** of making the combination;

(C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and

(D) **Reasonable expectation of success** is the standard with which obviousness is determined.

Hodosh v. Block Drug Co., Inc., 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed.

Cir. 1986)(emphasis added). In other words, it is not necessary for the references to

teach away from the combination - ***it is enough that there be no suggestion in the references that they be combined.*** MPEP § 706.02(j); § 2141 (emphasis added). The mere fact that the references can be combined is not sufficient. MPEP § 2143.01 There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify or combine reference teachings. *Id.*; see also, *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430, (Fed. Cir. 1990)(The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination); 916 F.2d at 682, 16 USPQ2d at 1432, (Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so.").

Nothing in the references suggest the desirability of combining the references to arrive at the present invention. The Examiner asserts that Gonzalez's admonition to refrain from turning the autotransformer "all the way down" would motivate one of ordinary skill in the art to combine Gonzalez with Scholz to add the load resistor RB to prevent damage to the amplifier. OA, ¶ 21. However, in considering the references as a whole, it is clear that Gonzalez teaches that the use of a variable autotransformer produces a wide variation the tonal quality of the amplifier output – i.e., the sound of the instrument. Gonzalez, p.1 ("You'll be amazed at all the ***different sounds*** you can get . . .")(emphasis added). In view of the explicit teachings of Gonzalez, one of ordinary skill in the art attempting to achieve the objectives of the present invention (i.e., preserving the sound of the instrument while varying the volume thereof) would not

consider the autotransformer of Gonzalez to be a desirable element of a such volume control system. Thus, there would be no motivation to combine Gonzalez and Scholz.

Furthermore, if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). As noted above, Gonzalez is directed to a device for producing **different** sounds. To modify Gonzalez in the manner suggested by the Examiner would render Gonzalez inoperable for its intended purpose. Accordingly, there is no suggestion or motivation to make the proposed modification.

One of ordinary skill in the art would have even less motivation to combine Lowell and Scholz. Lowell is directed to public address systems. This fact is particularly significant, because artisans seeking to provide musical amplification systems simply would not be motivated look to art relating to public address systems. This is because public address systems typically are not designed to provide the specific type of fidelity provided by musical amplifiers (i.e., the provision of controllably overdriven or distorted sound).

In other words, the nature of the problem solved by the present invention is a much more narrow and difficult problem specific to musical amplifiers. The present invention seeks to attenuate of the output of a musical amplifier without actually affecting the manner in which the voltage and current gain stages are driven, as it is the loading of these gain stages (typically into distortion) that colors the musical sound in a desirable manner. It is critical that this load on the amplifier be substantially maintained, across the frequency spectrum, to retain the desired sound quality. Nothing in Lowell

even suggest this is a concern or a desirable result of using the Lowell device. Simply put, one of ordinary skill in the art would have no motivation to consider art relating to the attenuation of public address amplifier output while seeking a solution to the problem solved by the present invention. Lowell simply isn't relevant to musical amplification, thus there is no motivation to combine Lowell and Scholz.

Likewise, there is no motivation to combine Scholz with Lowell or Gonzalez. The Examiner asserts that Scholz's use of the "the general term 'impedance means' suggests that impedance elements consisting of other than resistors is contemplated." OA, ¶ 21. This does not, however, suggest that Scholz contemplated the use of an inductor in the place of the resistor chain.

In order to rely on equivalence as a rationale supporting an obviousness rejection, the equivalency must be recognized in the prior art, and cannot be based on applicant's disclosure or the mere fact that the components at issue are functional or mechanical equivalents. In re Ruff, 256 F.2d 590, 118 USPQ 340 (CCPA 1958). Resistors and inductors (such as the coil of a variable autotransformer), while both having impedance, are not always interchangeable in a circuit. This is particularly so when the circuit in question is an audio circuit. This is because the nature of the impedance generated by resistors is not frequency dependent. In contrast, the nature of the impedance generated by an inductor is highly frequency dependent. In fact, inductors are commonly used as elements of audio filters to change the characteristics of an audio signal. Inductors or "chokes" are commonly found in high power musical amplifiers for specifically this purpose. This alone would suggest that those of ordinary

skill in the art would not assume that resistors and inductors could be freely substituted for one another without having significant impact on the audio signal.

Even the Gonzalez reference specifically teaches that the inclusion of a variable audio transformer in the audio signal path of a guitar amplifier will create a great variety in sounds. Since the nature of the problem solved by the present invention is the attenuation of the volume of a musical amplifier while preserving its sound quality, one of ordinary skill in the art would have no motivation to modify Scholz to include a variable autotransformer in lieu of the resistor chain.

Moreover, it is improper to combine references where the references teach away from their combination. In re Grasselli, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983), see also, MPEP § 2141.02 (prior art must be considered in its entirety, including disclosures that teach away from the claims) and MPEP § 2143.01 (proposed modification cannot render the prior art unsatisfactory for its intended purpose or change the principle of operation of a reference).

Contrary to the Examiner's assertions, Gonzalez, Lowell, and Scholz do teach away from a combination thereof and a teach away from the invention as well. As noted above, Gonzalez teaches a structure for achieving different sounds by interposing a variable autotransformer between an amplifier and a speaker. Gonzalez, page 1 ("You'll be amazed at all the different sounds you can get as you vary the [impedance] matching."). Thus, Gonzalez is teaching away from the invention, which is intended to preserve the sound of the amplifier the volume is attenuated.

Scholz teaches that substantially continuous controllers – specifically potentiometers – are undesirable, due non-uniform and unreliable performance.

Scholz, 1:48-55. Thus, Scholz teaches away from the use of variable autotransformers, which are continuously variable controllers, subject to the same risk of non-uniformity, wear, and drop-out as any other mechanically variable device. One of ordinary skill in the art, upon reading Scholz's admonition against the use of potentiometers would not be motivated to, and would in fact be taught away from, replacing the resistor chain of Scholz with a variable autotransformer of Gonzalez.

Furthermore, Scholz is specifically directed to providing a compact, i.e., small system. One of ordinary skill in the art would be familiar with the fact that variable autotransformers are quite large – typically significantly larger and heavier than even high power potentiometers. Thus, one of ordinary skill would thus be unmotivated to, and would in fact be taught away from, replacing the resistor chain of Scholz with a variable autotransformer of Gonzalez or Lowell.

For at least the reasons stated above, neither Scholz, Lowell, nor Gonzalez, either alone or in combination, teach or suggest a volume attenuator comprising a variable autotransformer in a ladder network arrangement with a load resistor and a speaker, as recited in independent claims 20 and 26. Accordingly, the Applicant respectfully requests that claims 20 and 26 be allowed. Likewise, claims 21-25 and 27-31, which depend from claims 20 and 26, respectively, also are believed to be allowable.

V. CONCLUSION


By virtue of the amendment and arguments stated herein, Applicants believe that all pending claims 20-31 are in good condition for allowance, and respectfully request allowance thereof. If, for some reason, a notice of allowance cannot be envisaged after

consideration of the present Amendment, a telephone call with the undersigned at (310) 497-5221 to discuss any deficiencies would be earnestly appreciated.

Respectfully submitted,

Dated: _____

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